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     (FILE 'HOME' ENTERED AT 16:51:01 ON 27 AUG 1998)

     FILE 'USPATFULL, WPIDS, INSPEC, ELCOM' ENTERED AT 16:51:16 ON 27
     AUG 1998
L1            77 S SOLITON(P)DISPERSION MANAGEMENT
L2            69 S L1(P)((OPTIC? OR LIGHT)(2A)(FIBER OR FIBRE))
L3            10 S L2(P)DISPERSION COMPENSAT?
L4             0 S L3(P)(OPPOSITE SIGN OR POSITIVE OR NEGATIVE)
L5             1 S L3 AND (OPPOSITE SIGN OR POSITIVE OR NEGATIVE)

=> d l5 bib abs


L5   ANSWER 1 OF 1  USPATFULL
AN     1998:66597  USPATFULL
TI     Optical fiber transmission line, optical fiber transmission system
       and production method thereof, and optical fiber combining method
IN     Iwatsuki, Katsumi, Yokohama, Japan
       Suzuki, Kenichi, Yokohama, Japan
       Kawai, Shingo, Yokosuka, Japan
PA     Nippon Telegraph and Telephone Corporation, Tokyo, Japan (non-U.S.
       corporation)
PI     US 5764841  980609
AI     US 97-840024  970424 (8)
PRAI   JP 96-105807  960425
DT     Utility
EXNAM  Primary Examiner: Palmer, Phan T. H.
LREP   Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.
CLMN   Number of Claims: 10
ECL    Exemplary Claim: 1
DRWN   24 Drawing Figure(s); 14 Drawing Page(s)
LN.CNT 789
AB     The optical fiber transmission line according to the present
       invention comprises first optical fibers having dispersion values
       greater than the average dispersion value D.sub.av over the entire
       transmission distance and second optical fibers having dispersion
       values less than the average dispersion value D.sub.av, wherein
       the average dispersion value D.sub.av over the entire transmission
       distance is in the anomalous dispersion region, the respective
       lengths L.sub.i and L.sub.i ' of the first and second optical
       fibers are shorter than the soliton length Z.sub.0 (wherein i is
       an arbitrary natural number), and the relationship between the
       lengths L.sub.i and L.sub.i ' and the larger of the respective
       differences D.sub.i and D.sub.i ' between the dispersion values of
       the first and second optical fibers and the average dispersion
       value D.sub.av satisfies the following condition:

       (L.sub.i +L.sub.i ')/Z.sub.0 <0.35/{1+0.20(the larger of D.sub.i
       and D.sub.i '/D.sub.av)}


=> d l3 1-10 bib abs


L3   ANSWER 1 OF 10  USPATFULL
AN     1998:66597  USPATFULL
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TI Optical fiber transmission line, optical fiber transmission system and production method thereof, and optical fiber combining method
IN Iwatsuki, Katsumi, Yokohama, Japan
Suzuki, Kenichi, Yokohama, Japan
Kawai, Shingo, Yokosuka, Japan
PA Nippon Telegraph and Telephone Corporation, Tokyo, Japan (non-U.S. corporation)
PI US 5764841 980609
AI US 97-840024 970424 (8)
PRAI JP 96-105807 960425
DT Utility
EXNAM Primary Examiner: Palmer, Phan T. H.
LREP Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.
CLMN Number of Claims: 10
ECL Exemplary Claim: 1
DRWN 24 Drawing Figure(s); 14 Drawing Page(s)
LN.CNT 789
AB The optical fiber transmission line according to the present invention comprises first optical fibers having dispersion values greater than the average dispersion value D.sub.av over the entire transmission distance and second optical fibers having dispersion values less than the average dispersion value D.sub.av, wherein the average dispersion value D.sub.av over the entire transmission distance is in the anomalous dispersion region, the respective lengths L.sub.i and L.sub.i ' of the first and second optical fibers are shorter than the soliton length Z.sub.0 (wherein i is an arbitrary natural number), and the relationship between the lengths L.sub.i and L.sub.i ' and the larger of the respective differences D.sub.i and D.sub.i ' between the dispersion values of the first and second optical fibers and the average dispersion value D.sub.av satisfies the following condition:

(L.sub.i +L.sub.i ')/Z.sub.0 <0.35/{1+0.20(the larger of D.sub.i and D.sub.i '/D.sub.av)}

L3 ANSWER 2 OF 10 USPATFULL
AN 94:100409 USPATFULL
TI Ultra-high capacity non-soliton optical transmission using optical phase conjugation
IN Gnauck, Alan H., Middletown, NJ, United States
Kurtzke, Christian, Hazlet, NJ, United States
PA AT&T Bell Laboratories, Murray Hill, NJ, United States (U.S. corporation)
PI US 5365362 941115
AI US 93-120014 930910 (8)
DT Utility
EXNAM Primary Examiner: Chilcot, Jr., Richard E.; Assistant Examiner: Negash, Kinfe-Michael
CLMN Number of Claims: 20
ECL Exemplary Claim: 13
DRWN 12 Drawing Figure(s); 5 Drawing Page(s)
LN.CNT 959
AB The present invention provides an apparatus and method for achieving bit rate distance products on the order of 200 Tbits/s-km in non-soliton optical communication using optical phase conjugation. The apparatus and method utilize phase conjugation and adjustments of in-line amplifier number, spacing, and/or output power in order to compensate for the interaction between first order dispersion and fiber nonlinearity dispersion effects in an optical fiber span. The present invention provides additional techniques for adjusting system parameters, such as dispersion-length products of first and second portions of the fiber span, in order to compensate for changes in first order dispersion resulting from non-zero second order dispersion. The

method and apparatus also provide an improved multi-channel optical phase conjugation system design.

L3 ANSWER 3 OF 10 INSPEC COPYRIGHT 1998 IEE
AN 98:5943913 INSPEC DN A9814-4265S-013; B9807-4340-091
TI Suppression of **soliton** jitter and interactions by means of **dispersion management**.
AU Malomed, B.A. (Fac. of Eng., Tel Aviv Univ., Israel)
SO Optics Communications (1 Feb. 1998) vol.147, no.1-3, p.157-62. 20 refs.
Doc. No.: S0030-4018(97)00484-7
Published by: Elsevier
Price: CCCC 0030-4018/98/$19.00
CODEN: OPCOB8 ISSN: 0030-4018
SICI: 0030-4018(19980201)147:1/3L.157:SSJI;1-#
DT Journal
TC Theoretical
CY Netherlands
LA English
DN A9814-4265S-013; B9807-4340-091
AB Suppression of interaction between solitons in a nearly **dispersion-compensated** nonlinear optical link built of alternating segments with opposite values of the dispersion is considered analytically in terms of an effective interaction potential generated by exponentially decaying solitons tails. It is demonstrated that the effective interaction force is that in the homogeneous fiber divided by a factor equal to a ratio of the actual value of the dispersion to its small mean value. An important result is obtained for the **soliton** jitter in a similar model, in which, however, the mean dispersion slowly decreases 1/z, rather than being constant. By means of the Fokker-Planck equation for the **soliton**'s random walk, it is shown analytically that this mode of the **dispersion management** provides a strong suppression of the jitter, so that the mean-square random displacement of the **soliton** grows only as z, in contrast with the Gordon-Haus growth law z3 A simple relation between parameters of the corresponding **dispersion-management** map, providing the strongest jitter suppression, is found.

L3 ANSWER 4 OF 10 INSPEC COPYRIGHT 1998 IEE
AN 98:5875896 INSPEC DN A9809-4280S-038; B9805-6260-106
TI 10 Gbit/s-**soliton** transmission over 5700 km in **dispersion compensated** standard fiber systems.
AU Murai, H.; Shikata, M.; Tanaka, K.; Yamada, H.T.; Yamazaki, H.; Ozeki, Y. (Semicond. Technol. Lab., Oki Electr. Ind. Co. Ltd., Tokyo, Japan)
SO IEICE Transactions on Electronics (Feb. 1998) vol.E81-C, no.2, p.232-4. 6 refs.
Published by: Inst. Electron. Inf. & Commun. Eng
CODEN: IELEEJ ISSN: 0916-8524
SICI: 0916-8524(199802)E81C:2L.232:GSTO;1-C
DT Journal
TC Practical; Theoretical
CY Japan
LA English
DN A9809-4280S-038; B9805-6260-106
AB The reduction of **soliton-soliton** interaction to stabilize the **soliton** pulse propagation in the periodic **dispersion-compensated** standard **fiber** system using **optical** bandpass filter has been investigated by numerical simulation, and experimentally 10 Gbit/s **soliton** transmission was realized without line tuning **dispersion management** over 5700 km, using

appropriate optical bandpass filters and polarization scrambler.

L3 ANSWER 5 OF 10 INSPEC COPYRIGHT 1998 IEE
AN 97:5764949 INSPEC DN A9801-4281-009; B9801-6260-035
TI Performance of optically amplified **dispersion-compensated** links: reduction of the time jitter for return to zero signals.
AU Malomed, B.A. (Fac. of Eng., Tel Aviv Univ., Israel); Matera, F.; Settembre, M.
SO Optics Communications (15 Nov. 1997) vol.143, no.4-6, p.193-8. 18 refs.
Doc. No.: S0030-4018(97)00348-9
Published by: Elsevier
Price: CCCC 0030-4018/97/$17.00
CODEN: OPCOB8 ISSN: 0030-4018
SICI: 0030-4018(19971115)143:4/6L.193:POAD;1-5
DT Journal
TC Theoretical
CY Netherlands
LA English
DN A9801-4281-009; B9801-6260-035
AB We report on a numerical study of the performance of optically amplified systems operating in links with **dispersion management**, evaluating the Q factor and the time jitter. By a comparison of the return to zero signals and nonreturn to zero signals, and considering different sawtooth distributions of chromatic dispersion we have found the best propagation conditions for links operating at transoceanic distances. The results show that **soliton** signals permit to achieve the highest performance when they propagate in links with a sawtooth distribution with a low anomalous average GVD and when the parameters of the **dispersion management** satisfy some conditions. The main advantages of **dispersion management** for **soliton** signals are the increase of the tolerance of the signal power and the reduction of the time jitter.

L3 ANSWER 6 OF 10 INSPEC COPYRIGHT 1998 IEE
AN 97:5726168 INSPEC DN A9723-4281-005; B9712-4125-007
TI **Soliton** transmission using periodic **dispersion compensation**.
AU Smith, N.J. (Dept. of Electr. & Electron. Eng. & Appl. Phys., Aston Univ., Birmingham, UK); Doran, N.J.; Forysiak, W.; Knox, F.M.
SO Journal of Lightwave Technology (Oct. 1997) vol.15, no.10, p.1808-22. 46 refs.
Doc. No.: S0733-8724(97)07708-6
Published by: IEEE
Price: CCCC 0733-8724/97/$10.00
CODEN: JLTEDG ISSN: 0733-8724
SICI: 0733-8724(199710)15:10L.1808:STUP;1-L
DT Journal
TC Theoretical
CY United States
LA English
DN A9723-4281-005; B9712-4125-007
AB We examine the behavior of solitons in optical fibers where the dispersion is alternated between the normal and anomalous regimes. The periodic nature of the system strongly modifies the shape of the stable **soliton** (solitary wave) pulses, and increases their energy when compared with solitons in equivalent uniform fibers. Power enhancement factors of up to 70 are numerically observed. This leads to both an increased signal-to-noise ratio (SNR) at the receiver and reduced Gordon-Haus timing jitter. The interaction between pairs of isolated pulses is examined. We also examine implementations including periodic amplification, and show that the energy scalings introduced by the amplification and the

dispersion management are independent provided that the period of the two processes are dissimilar. We show that there is an optimum **dispersion compensation** ratio which minimizes the received Gordon-Haus jitter. A diagrammatic technique is presented for estimating the performance of **dispersion compensated soliton** transmission systems.

L3 ANSWER 7 OF 10 INSPEC COPYRIGHT 1998 IEE
AN 97:5572750 INSPEC DN B9706-6260-081
TI Modelling WDM **soliton** transmission in dispersion-managed systems.
AU Devaney, J.F.L.; Forysiak, W. (Photonics Res. Group, Aston Univ., Birmingham, UK); Smith, N.J.; Doran, N.J.
SO IEE Colloquium on WDM Technology and Applications (Ref. No.1997/036) London, UK: IEE, 1997. p.19/1-4 of 130 pp. 9 refs.
Conference: London, UK, 6 Feb 1997
Sponsor(s): IEE
DT Conference Article
TC Theoretical
CY United Kingdom
LA English
DN B9706-6260-081
AB We have shown that a **soliton** system with strong **dispersion management** is compatible with four 10 Gbit/s channel WDM up to 5000 km. The equivalent non-managed system gives unacceptable errors at 3000 km. No third order **dispersion compensation** or filtering was used and the channel spacings were up to 3.2 nn; a significant portion of the erbium doped fibre amplifier bandwidth. Third order dispersion has been identified as the major limiting effect. Third order **dispersion compensation** to maintain low dispersion across all the channels reduces the translation of collision induced frequency shifts into timing jitter, and hence allows increased transmission capacities.

L3 ANSWER 8 OF 10 INSPEC COPYRIGHT 1998 IEE
AN 96:5428622 INSPEC DN A9701-4280S-012; B9701-6260-025
TI 20-Gb/s single-channel **soliton** transmission over 9000 km without inline filters.
AU Morita, I.; Suzuki, M.; Edagawa, N.; Yamamoto, S.; Taga, H.; Akiba, S. (KDD R&D Lab., Saitama, Japan)
SO IEEE Photonics Technology Letters (Nov. 1996) vol.8, no.11, p.1573-4. 9 refs.
Doc. No.: S1041-1135(96)08179-7
Published by: IEEE
Price: CCCC 1041-1135/96/$05.00
CODEN: IPTLEL ISSN: 1041-1135
SICI: 1041-1135(199611)8:11L.1573:SCST;1-S
DT Journal
TC Practical; Experimental
CY United States
LA English
DN A9701-4280S-012; B9701-6260-025
AB 20 Gb/s single-channel **soliton** signal has been successfully transmitted over 9000 km without inline filters, for the first time, using periodic **dispersion compensation**. The Gordon-Haus timing jitter at 9000 km was reduced by a factor of more than 3 just with the **dispersion management**.

L3 ANSWER 9 OF 10 INSPEC COPYRIGHT 1998 IEE
AN 96:5278936 INSPEC DN A9613-4280S-006; B9607-6260-037
TI Stabilization of sliding-filtered **soliton** wavelength division multiplexing transmissions by **dispersion-**

compensating fibers.
AU Wabnitz, S. (Fondazione Ugo Bordoni, Rome, Italy)
SO Optics Letters (1 May 1996) vol.21, no.9, p.638-40. 15 refs.
Published by: Opt. Soc. America
Price: CCCC 0146-9592/96/090638-03$10.00/0
CODEN: OPLEDP ISSN: 0146-9592
SICI: 0146-9592(19960501)21:9L.638:SSFS;1-S
DT Journal
TC Theoretical
CY United States
LA English
DN A9613-4280S-006; B9607-6260-037
AB It is shown that the instability that occurs in sliding-filter-guided, periodically amplified wavelength division multiplexing transmission systems whenever the amplifier spacing is close to the collision distance may be removed by means of the proper **dispersion management**.

L3 ANSWER 10 OF 10 ELCOM COPYRIGHT 1998 CSA
AN 1998:6131 ELCOM
TI 10 Gbit/s-soliton transmission over 5700 km in dispersion compensated standard fiber systems
AU Murai, Hitoshi; Shikata, Makoto; Tanaka, Kazuo; Yamada, Hiromi T.; Yamazaki, Hiroyuki; Ozeki, Yukihiro
CS Oki Electric Industry Co, Ltd, Hachioji-shi, Jpn
SO IEICE TRANS ELECTRON, (19980200) vol. E81-C, no. 2, pp. 232-234. ISSN: 0916-8524.
DT Journal
FS E
LA English
AB The reduction of **Soliton-soliton** interaction to stabilize the **soliton** pulse propagation in the periodic **dispersion-compensated** standard **fiber** system using **optical** bandpass filter has been investigated by numerical simulation, and experimentally 10 Gbit/s **soliton** transmission was realized without fine tuning **dispersion management** over 5700 km, using appropriate optical bandpass filters and polarization scrambler.